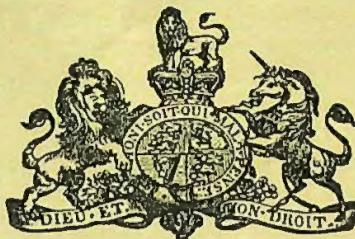


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A.D. 1854 . . . . N° 1509.

## Brewing and Distilling.

(This Invention did not proceed to the Great Seal.)

**PROVISIONAL SPECIFICATION** left by David Beck at the Office of the Commissioners of Patents, with his Petition, on the 10th July 1854.

I, DAVID BECK, of Carlton House, Southampton, in the County of Southampton, Doctor of Medicine, do hereby declare the nature of the said 5 Invention for "IMPROVEMENTS IN BREWING AND DISTILLING" to be as follows:—

(W) By the short and imperfect mode of infusing and macerating hop, adopted in the present process of brewing malt liquors, only a very small quantity of the bitter and other active principles contained in the said hop is thus extracted, while the beautiful aroma and essential or volatile oil of hop is allowed almost 10 totally to escape into the open air; I adopt, therefore, the following improved process:—

a). I distill off the aroma and essential oil from the hop, either before or after the process of infusing and macerating of the hop had been effected, and add 15 the odoriferous water and volatile or essential oil to malt liquors at such a time as may be thought best for and consistent with the preservation of those volatile ingredients.

b). This distillation of the volatile principles of hop I carry on in two different ways, that is, with the assistance of alcohol, or other ingredients similar to alcohol in their solvent powers, or merely with the assistance of water, in 20 the same way as perfumed waters are distilled.

c). During the distillation and consequent digestion of hops, particularly with the assistance of such solvents as alcohol, the bitter and other active

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principles contained in hops are solved and extracted in greater quantities than is done by the present system of treating the hop.

*d).* Instead of simply infusing or briefly macerating hop in malt liquors, as is done in the present mode of brewing, I cause the hop to be inserted into the vessels containing such liquors, and there to remain as long as the liquors last, so as to allow the hop a chance of macerating slowly and gradually, and thus to impart to such malt liquors its bitter and aromatic principles.

*e).* As the active principles of hop are intimately combined with a peculiar and characteristic sort of resin, I adopt also another method in addition to that of the alcoholic for solving that resin, so as fully to develope and seperate from hop the said resin and its main attributes. This method consists in treating hop leaves with alkalies, such as potass, soda, ammonia, and such like, or with alkaline earths, such as lime, and the like.

The alkalies or alkaline earths serve also to disengage and seperate from vegetable substances of hop all the other active ingredients which are useful to malt liquors.

*2dly,* the present mode of extracting the principal qualities from malt is very imperfect, both in the process of brewing, as also in that of distilling; for, according to the highest authorities, malt contains in 100 parts,—

Resin	-	-	-	-	-	-	1	20
Gum	-	-	-	-	-	-	15	
Sugar	-	-	-	-	-	-	15	
Gluten	-	-	-	-	-	-	1	
Starch	-	-	-	-	-	-	56	
Hordein	-	-	-	-	-	-	12 parts;	25

so that the belief that in the process of malting of barley the starch contained in the seeds is converted into sugar is quite erroneous, for only 15 parts of sugar are developed by the process of malting, and 56 parts of starch remain in the grain in the primitive state.

Further, the belief that starch possesses the property of undergoing the same direct vinous fermentation as sugar is also overthrown by more correct data, which prove that before starch can be made to undergo the vinous, it first must pass through the saccharine fermentation. Now, in the present process of brewing and distilling, no means are adopted to reduce the starch of malt into sugar, so that in brewing, the starch which after coction resides in the grain in a pulpy state is only partially washed out by and diffused through malt liquors, while the greatest part of such starch is left untouched in the grain, and is sent away to feed cattle and pigs.

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In the process of distilling, the entire quantity of this starch is retained by the grain, and is sent off for feeding the lower animals.

The small quantity of starch diffused in malt liquors is (as far as it goes) nutritious to the consumer; but, on the other hand, this very starch, in 5 conjunction with a few other vegetable ingredients, causes malt liquors to undergo a speedy acetous fermentation and to turn sour.

Now, my process consists in converting the whole quantity of starch contained in or extracted from malt or grain into saccharine matter, and this I effect by means of acids, but particularly by the sulphuric acid. After a 10 sufficient decoction, I separate the acid from the said saccharine matter by chalk, or any other absorbent or alkaline substance or liquid. The saccharine matter is then fermented in the ordinary way for the purposes of brewing or distilling, so that by means of my process I obtain from the same quantity of malt a greater quantity of malt liquor or of alcohol than is obtained by the 15 present mode of brewing or distilling; and at the same time, the malt liquors thus brewed, on account of their being freed of the starchy fecula, resemble more the grape wine in their qualities, and are capable of being preserved for a greater length of time (than those brewed on the present system) without turning sour.

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LONDON :

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,  
Printers to the Queen's most Excellent Majesty. 1855.